

CLAIM AMENDMENTS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An injector system comprising:

a source of injection fluid;

a pump device;

a fluid path set in fluid connection with the source of injection fluid and the pump device, and comprising a multi-position valve;

an air detector assembly operatively engaged with a portion of the fluid path set and adapted to detect the presence of air in the fluid path set;

a fluid control device operatively associated with the multi-position valve of the fluid path set and disposed downstream of the pump device, the fluid control device comprising a valve actuator to automatically operate the multi-position valve, the valve actuator comprising a sensor indicating the presence of the multi-position valve in the valve actuator and adapted to close the multi-position valve to isolate the pump device and fluid flow from a patient and stop flow of the injection fluid to the patient at substantially any pressure or flow rate generated by the pump device for delivering a sharp bolus of the injection fluid to the patient;

a drip chamber in fluid communication with the fluid path set, the drip chamber comprising an elongated body having a top end, a bottom end and a raised projection, the raised projection being substantially rectangular in shape and extending longitudinally from the top end along the drip chamber body and terminating adjacent to the bottom end; and

a fluid level sensing mechanism operably associated with the fluid control device, the fluid level sensing mechanism comprising:

a drip chamber support for supporting the drip chamber body; and

a fluid level sensor comprising an ultrasonic or an optical sensor associated with the drip chamber support, the drip chamber support adapted to support the drip chamber body such that the raised projection is in operational contact with the fluid level sensor and the fluid level sensing mechanism is operable to transmit ultrasonic or light energy through the raised

projection to be sensed by the fluid level sensor for sensing the injection fluid level in the drip chamber.

2. (Canceled)

3. (Previously Presented) The injector system of claim 1 wherein the valve actuator further comprises a position indicator indicating a position of the multi-position valve.

4. (Canceled)

5. (Previously Presented) The injector system of claim 1 wherein the valve actuator further comprises a retainer for removably supporting the multi-position valve.

6-7. (Canceled)

8. (Original) The injector system of claim 1 wherein the pump device comprises a powered injector.

9. (Original) The injector system of claim 1, further comprising:
a source of medical fluid associated with the fluid path set; and
a pump operatively associated with the source of medical fluid for supplying the medical fluid to the patient via the fluid path set.

10. (Canceled)

11. (Previously Presented) The injector system of claim 9 further comprising a second air detector assembly operatively associated with the fluid path set.

12. (Original) The injector system of claim 9 further comprising a shut-off valve associated with the pump for stopping flow of the medical fluid to the patient.

13. (Original) The injector system of claim 12 wherein the shut-off comprises an automated pinch valve.

14. (Original) The injector system of claim 9 wherein the pump comprises a peristaltic pump.

15. (Original) The injector system of claim 9 wherein the fluid control device further comprises guides for securing the fluid path set in association with the pump.

16. (Original) The injector system of 1, further comprising a hand held control device for controlling the flow rate of the injection fluid from the pump device.

17. (Previously Presented) An injector system comprising:

a drip chamber comprising an elongated body having a top end, a bottom end and a raised projection, the raised projection being substantially rectangular in shape and extending longitudinally from the top end along the drip chamber body and terminating adjacent to the bottom end; and

a fluid level sensing mechanism comprising:

a drip chamber support for supporting the drip chamber body; and

a fluid level sensor comprising an ultrasonic or an optical sensor associated with the drip chamber support, the drip chamber support adapted to support the drip chamber body such that the raised projection is in operational contact with the fluid level sensor and the fluid level sensing mechanism is operable to transmit ultrasonic or light energy through the raised projection to be sensed by the fluid level sensor.

18-20. (Canceled)

21. (Previously Presented) The injector system of claim 1 wherein the air detector assembly comprises:

an air column detector adapted to detect the presence of air in medical tubing; and

a retaining device for securing the medical tubing in operative association with the air column detector, the retaining device comprising:

a base adapted for association with the air column detector; and

a closure member connected to the base and adapted to secure the medical tubing in operative association with the air column detector, wherein the closure member is movable from a closed position wherein the closure member secures the medical tubing in operative association with the air column detector, and an open position allowing the medical tubing to be disassociated from the air column detector, the closure member biased to the open position.

22. (Canceled)

23. (Previously Presented) The injector system of claim 21 wherein the closure member is secured in the closed position by a releasable locking mechanism.

24. (Canceled)

25. (Previously Presented) The injector system of claim 21 wherein the closure member is formed of substantially clear plastic material to permit viewing of the medical tubing.

26-115. (Canceled)

116. (Previously Presented) The injector system of claim 23 wherein the locking mechanism is adapted to maintain the closure member in the closed position against the biased closure member and is automatically releasable to allow the biased closure member to move to the open position.

117. (Previously Presented) The injector system of claim 116 wherein the locking mechanism is adapted to be automatically released by actuating a button associated with the locking mechanism.

118. (Previously Presented) The injector system of claim 17 further comprising an indicator light associated with the fluid level sensor for illuminating the drip chamber.

119. (Previously Presented) The injector system of claim 118 wherein the fluid level sensing mechanism is adapted to cause the indicator light to intermittently operate if a fluid level in the drip chamber is below a preset level.